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EM 006 838

Movies with a Purpose A Teacher's Guide to Planning and Producing Super 8 Movies for Classroom Use.
Eastman Kodak Co., Rochester, N.Y.

Note -28p.

EDRS Price MF -\$0.25 HC -\$1.50

Descriptors -Audiovisual Aids, *Film Production, *Instructional Films, *Production Techniques, Projection Equipment, *Single Concept Films, Sound Films, *Teacher Developed Materials, Teacher Improvement

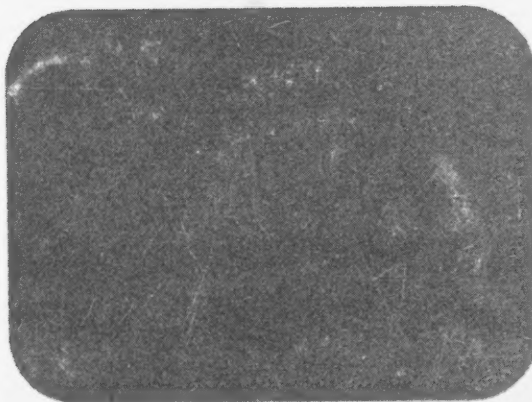
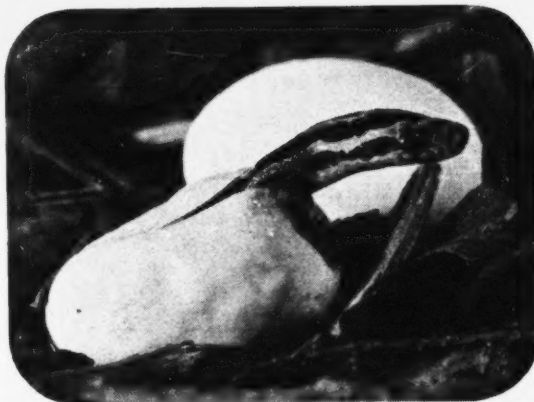
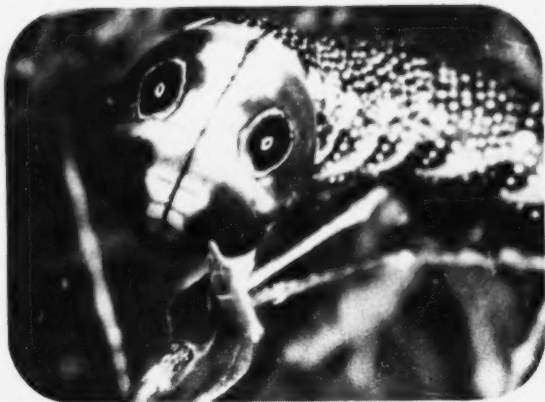
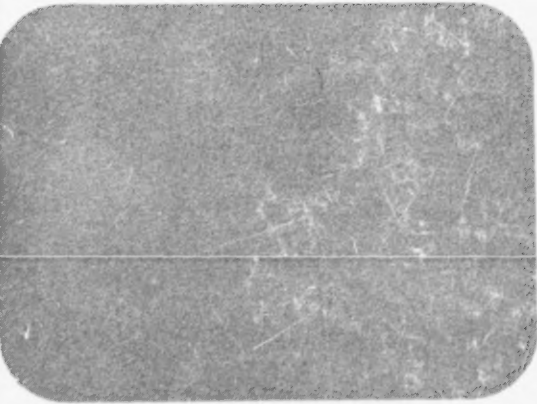
Identifiers - *Kodak Ektagaphic 8 Camera, Kodak Ektagaphic 8 Projectors, Kodak Instamatic M100A Projector

Teachers can improve classroom procedure by producing and showing their own 8mm films, while building a library of effective teaching aids. These motion pictures are conceived as intrinsic parts of a teaching plan, and are designed to explain a single idea or concept. Single-concept or specific-objective films generate a high degree of student involvement. To make your film, first define the objective with planning cards: sketch each shot, include camera angle, note the purpose of the shot, and number the cards in sequence. Adjust from one to four lighting lamps, position the camera, select a background, and make a dry run before the actual filming. Set the camera speed, film your movie; then process, edit, and add sound with the teaching objective in mind. A working knowledge of the language of movie-making speeds planning and production. An "objective" camera films the action impersonally, the "subjective" camera brings the viewer into the scene. A teacher must familiarize himself with production variables such as subject size, camera height, lens selection (wide-angle/normal/telephoto), and descriptive shots (pan/tilt/zoom/follow shot/insert/cutaway shot/continuous run/sequence shooting). For film continuity, match the action of each new scene to that of the preceding shot, and direct the motion that will appear on the screen. (TI)

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Movies with a purpose



A teacher's guide
to planning and producing
super 8 movies
for classroom use

Introducing the Teacher...

... movie-maker-with-a-purpose

Teachers—even those who never before had held a movie camera in their hands—have begun to make their own instructional movies. They found the movie-making experience exciting, stimulating, and extremely worthwhile. And to their surprise, they even found it *fun*!

To get started, experiment

Almost everyone first approaches a movie camera with some degree of trepidation. The whole idea of movie-making *seems* complicated, even though it really isn't. The easiest way to overcome your uncertainties is to borrow a camera and experiment with it. Hold it in your hand. Turn the knobs and see what happens. Look through the viewfinder. Shoot a roll of film at home. Photograph the kids, the neighbors, the dog, anything—just for the fun of it. Try panning and zooming. Try shooting some slow-motion and fast-motion sequences. Point the camera up, then down. Use the camera to tell a simple story such as how your husband (or wife) fries an egg.

Then, after the film is processed, sit back—in seclusion—and look at the results. Sure you'll have a few laughs at your own expense, but you will have learned something. *You will have learned just how easy it is to record good color images on film.* Your camera technique left something to be desired? And your movie didn't quite tell the story you thought it would? That's to be expected. After all, you've never made a movie

before. And that's the whole purpose of this book—to help you make movies that explain, demonstrate, involve; movies that help you teach; movies that help your students learn; movies that have a purpose.

Movie-making-with-a-purpose provides great satisfaction, and it pays off in results. By making your own movies, you'll probably find that you see things as you never saw them before. You'll see your subjects more clearly. You'll be able to better define problem areas. And your students will benefit. Because only through the motion-picture medium can you focus your students' attention on just those details that are important. You exclude all extraneous material. You present your message in a logical, orderly fashion, and your students understand. They learn faster and remember longer.

In many respects, making good educational films is a lot easier than making good home movies. With home movies, most amateurs shoot "willy-nilly" because the action is uncontrolled. But with educational movies, you control the action. Your film has a purpose, and you have a plan of action. And because you do, production comes easier, the results are more rewarding.

Just what is a movie subject? Primarily, any subject that needs motion—a reaction to a stimulus, a technique to be learned, a group activity. Here are a few examples:

and the Single-Concept Film

... movie-with-a-purpose

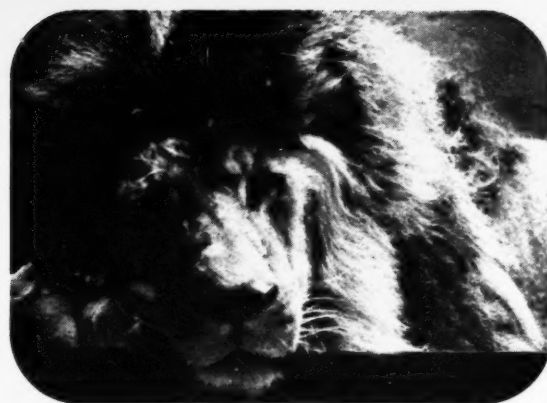


An art teacher wanted all her students to see exactly how a bamboo brush is held for various Sumi brushstrokes — not just those students in the front row during a demonstration. So she made a super 8 movie.

A botany teacher wanted his students to see how mushrooms look in the woods as well as in a classroom tray. So he made a super 8 movie.

A chemistry teacher made a movie of a lengthy experiment, eliminating the long delay in the middle of the process. The class got the idea quickly and clearly.

A first grade teacher wanted to dramatize the contrast between a lion in the local zoo and a kitten at home. A super 8 movie turned the trick.



A government teacher wanted to explain how a voting booth worked, so with the help of the local Board of Elections she made a short movie. And her class soon began to understand democracy in action.



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A new kind of movie evolved

The films teachers were making quickly evolved into a new kind of motion picture.

It was primarily designed to explain a single idea or concept. Its major characteristics were simplicity and directness. It lasted only long enough to communicate the idea — from a matter of seconds to four or five minutes.

Most significantly, these new movies were conceived and used as intrinsic parts of a teaching plan, working in coordination with a lecture, a lab demonstration, or a field trip. And as a bonus, teachers found that these films helped cut the time needed to prepare for a lesson or demonstration. Additionally, they found that students could view the films for remedial or makeup assignments.

These new kinds of movies were called, among other things, single-concept films, short films, film clips, specific-objective films, film bits, or brief films. Whatever you call them, they are perhaps one of the more significant new teaching tools available to teachers today.

Can your students benefit from a single-concept movie?

They can if you want them all to see something equally well at the same time or individually. If you want to get an idea across by compressing or stretching time. If you want to isolate a key idea so that you can repeat it again and again for clarity and emphasis.

If looking at the water treatment plant

five miles away for 10 seconds provides better teaching, you can do it easily — with film. If you want to cut two days from the middle of an experiment, film will do it for you. Film will do any number of things easily that would be impossible or ineffective with any other medium.

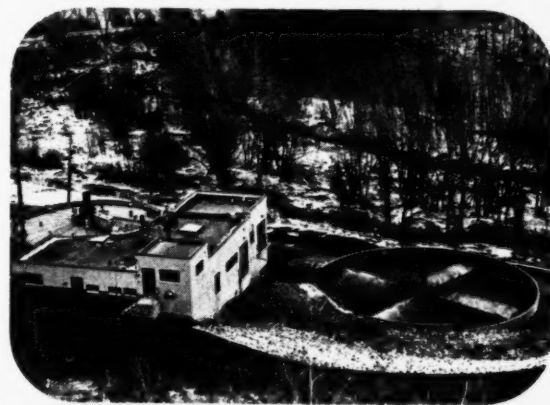
As a teacher, you have a good head start on instructional film-making projects. After all, you know the subject. The course. The problem areas. The students. And probably most important — you know precisely *what* you want to communicate.

Even if you have no movie-making experience, you aren't delving into an area where you are unqualified. You have already mastered the technique of communicating ideas to a class in a given amount of time. Additionally, you're probably more familiar with the film medium than you think.

In making a movie, you're just using a new tool to get a familiar job done. And this new tool will help you conserve teaching time by cutting time spent on repetitive presentations. The result: more time for creative teaching, more time to concentrate on the needs of individual students.

Picture the abstract or concrete

The specific-objective film can deal with an abstract idea or a concrete how-to-do-it situation. It can communicate the key idea in a short span of time — with more immediacy and impact than can be



generated in any other way. In the hands of an imaginative educator, there are virtually no limits in subject matter or applications.

And, produced by teacher, student, or school group, the single-concept film has the advantage of extreme pertinency.

A simple film on the use of a microscope, for example, will demonstrate the correct way to use the *identical instrument* the student will use in the *identical situation* in which he will use it. The presentation, furthermore, will be an organized one. It will proceed logically from step to step and will never omit any operation. It will always be done correctly. It can be shown one time or as many times as are necessary for complete understanding.

In the home economics class the student can be taught, with film, how to put a zipper in a dress or how to thread the machine she will be using. In shop class a movie can show students how to use the table saw. The teacher can then use his time to handle the special problems that require personal attention.

The single-concept film has been recognized as a valuable way to supplement a lesson plan. As a result, educators are now making single-concept films to teach such diversified subjects as the diagramming of a sentence, the relationship of architectural style between the local town hall and a classic Greek structure, or to visualize abstract concepts in mathema-

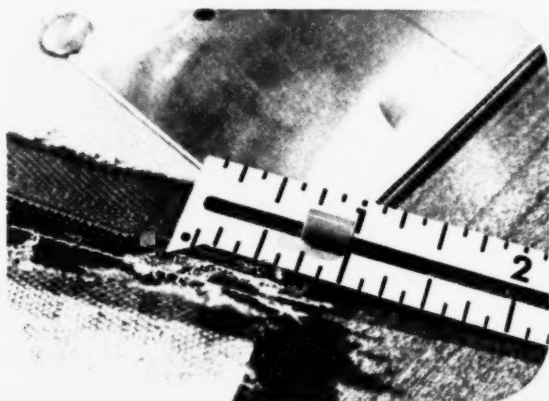
tics. Even words or phrases shown in conjunction with local area scenes have been used as a potent stimulation for the beginning reader.

A new way to involve the class

Single-concept film projects can be used to generate a high degree of student involvement. For example, any class, school club, or group can profit from the work involved in producing its own specific-objective movie. When students are invited to do such a project, they respond by putting extra effort into research on the project. They contribute an amazing degree of imagination, and thoroughly enjoy every phase of the job. When working with student groups, you'll probably find it advantageous to give each person in the group a specific job: script writer, sets and lighting man, cameraman, "performer," editor. You, of course, remain as editorial consultant and producer.

Teachers who make their own movies, or assign movies as class projects, quickly build up a valuable library of effective teaching aids—ready and waiting to be used at the precise times when their students will benefit most from them. These movies invariably enrich the learning process and frequently prove to be a rewarding stimulus to the teacher as well.

The following pages provide you with a step-by-step guide that will help you make your first single-concept movie.



Planning— The Most Important Step

You know how important a good lesson plan is to the effectiveness of your classroom presentation. The same thing is true of movie-making.

Teachers who have already made specific-objective films agree that the ultimate success of the film is in direct relationship to the care which went into planning the project. Thus planning becomes the most important stage. And after proper planning, actual filming may require no more than an hour's time and, frequently, is but a matter of minutes, depending on the subject matter.

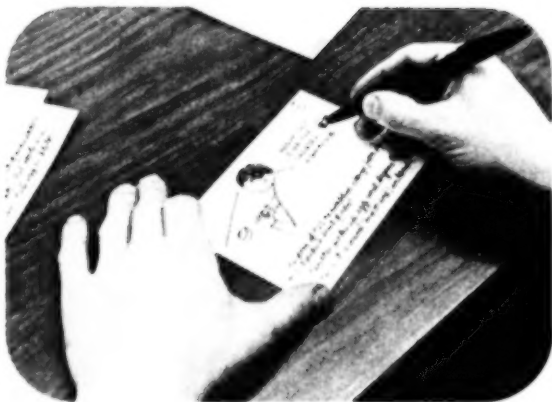
Adequate planning saves time and helps assure that all necessary details are included in your movie. It will contribute to logical exposition and can greatly reduce—or even eliminate—the necessity of editing the finished film.

Remember that during the planning phase, as well as when you are ready to make your motion picture, it may be helpful to seek the experience and advice of your school's audiovisual specialist.

Where do you begin?

Generally, it is advisable to set down on paper a short statement of your objective. What do you want your film to accomplish? *Be sure you limit your film to a single subject or concept.* Don't try to take on too big a subject. Instead, break the big idea into several sub-ideas of manageable size. And then, if necessary, make a film on each of these.

Try defining your objective in a single sentence that begins "After seeing the film, I want the student to . . ."



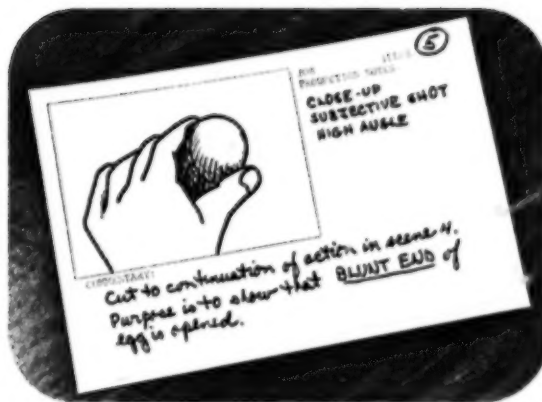
Next, list each procedure, each point you want to include in the finished film in order to achieve your objective. Write down each idea on a separate card. In planning, keep in mind that your movie will be a series of rapidly changing images, logically connected to convey the story you want to tell. Remember, motion pictures give you the opportunity to show the subject exactly the way you want your student to see it. You can alter the location of the camera. Move in close to show screen-filling detail. Or back away to show the overall scene. The choice is all yours!

Planning cards are a big help

The basic idea here is to use an index card for each visual idea you plan to show in your movie. Or one card for each shot, to put it another way.

You can, for example, use the lower part of the card to write in the summary of the shot's purpose or what will be said while the scene is being shown.

Use the upper left portion of the card to sketch in roughly what you plan to shoot in that scene. Use the upper right portion to note the camera location, type of shot—long shot, medium, etc., as described in the glossary—and approximate length of the scene.



Once your cards are completed you can lay them out on a tabletop and get a fairly good idea of the flow of your movie. Even more important, the cards give you the valuable option of rearranging scenes, eliminating some, adding new ones—quickly and easily.

Working with your cards in this way, you will save time and effort later on when you are actually filming your movie.

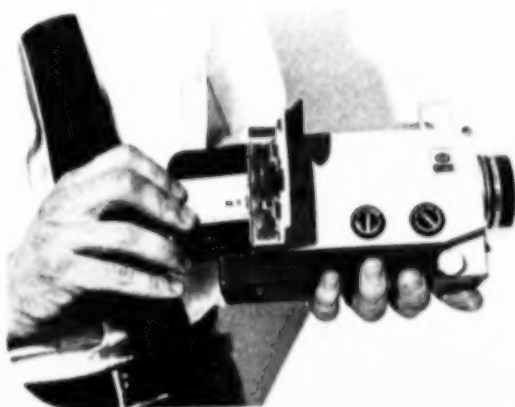


When your planning cards are arranged satisfactorily, number them so that you will always have them in the right order. Perhaps you'll want to go through the cards with a colleague to see how well the idea is expressed, or simply to get a fresh viewpoint.

At this point you're ready to start putting your ideas on film.

Production Is Easy

with Kodak Ektagraphic equipment



Selecting a camera. The new super 8 format gives you an excellent choice of versatile, foolproof cameras. The KODAK EKTAGRAPHIC 8 Camera uses black-and-white or color films in cartridges that load easily in seconds. Film speed is set automatically, and the camera provides manual or power zoom, reflex viewing, variable filming speeds, and automatic behind-the-lens exposure control.



1. Check your planning cards. These are your guides for shooting. Try to keep

three cards visible at all times so you can see the scene that has just been photographed, the scene being photographed, and the next scene to be taken. (When you start filming, put a check mark on each card after the scene indicated has been shot so you can tell at any time what has been put on film and what remains to be covered.) Be certain the cards are numbered, and feel free to rearrange them, if out-of-sequence shooting is easier.

2. Light your subject. For indoor filming, lighting is usually required, and you have several choices. All are easy to set up. The *best choice is several lights off the camera* to provide the required illumination and to help add three-dimensional form to the subject. Off-camera lighting gives you (a) better lighting control, (b) greater freedom of camera movement, and (c) better looking films. Here are some basic lighting setups:

a. single light ON camera. The simplest lighting technique is to use a single movie light mounted on the camera. This gives general illumination on all subjects which remain at approximately the same distance from the camera. When using a camera-mounted light, do not get closer than six feet to the subject. If you do, you will probably overexpose your scene and your film image will appear "washed out."

b. single light OFF camera. A single light off camera customarily is placed high and somewhat to one side of the camera. This main (or key) light provides the dominant illumination and gives the feeling of depth and form because of the shadows produced.

c. two lights for better movies. A second light can soften the shadows created by the single light and allows you greater freedom of camera movement. The second (or fill) light is positioned so that it lights the shadow side of the subject. It is often placed at about lens height (or just slightly above); near the camera; on the opposite side of the camera from the main light; and a little farther away from the subject than the main light.

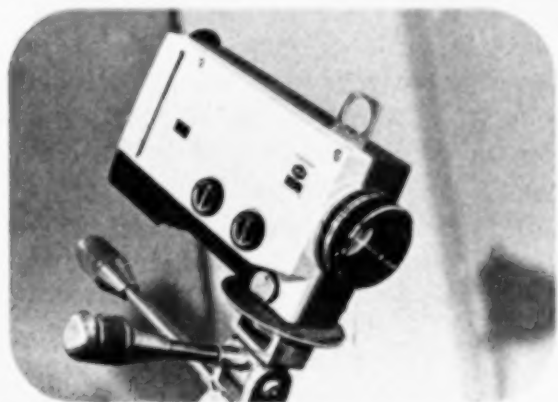
When copying flat subjects such as titles or still photographs, use two lights



of equal intensity. Position them at 45° angles to the subject to eliminate glare. If your titles are made with three-dimensional letters, use only one light. This will eliminate a confusing second set of shadows.

d. a third and fourth light may be added. If you want to outline your subject and set it apart from the background, place a third light diagonally across from the main light and high enough to be outside of camera range. This light helps separate the subject from the background. Avoid having it shine in the camera lens as this will throw off your camera's automatic exposure system. (You'll get dark pictures.) You can use a fourth light to illuminate the background. This light will help keep your subject from appearing to jump out from a dark cavern.

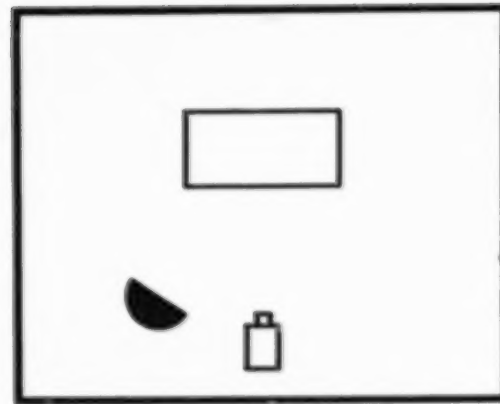
When you use off-camera lights, don't forget to insert the filter key in the slot at the top of the camera. Super 8 color



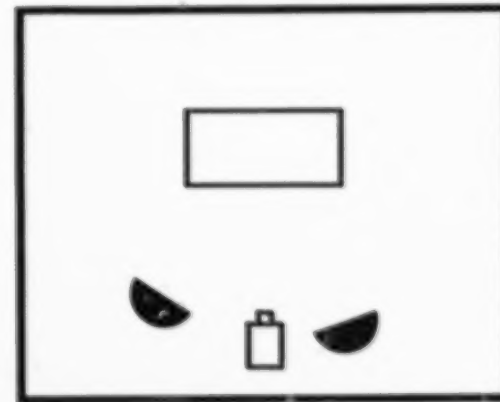
film is balanced for tungsten light. The camera has a filter behind the lens which lets you use this indoor film outdoors. In order to use the film indoors, this filter must be removed—either with a snap-on movie light or the filter key. If the room in which you make your movie has fluorescent lights, turn them off. Otherwise, your pictures will have a blue-green cast. If the room has windows, shut the drapes or close the blinds. Daylight coming in from the windows can cause your movie to turn blue.



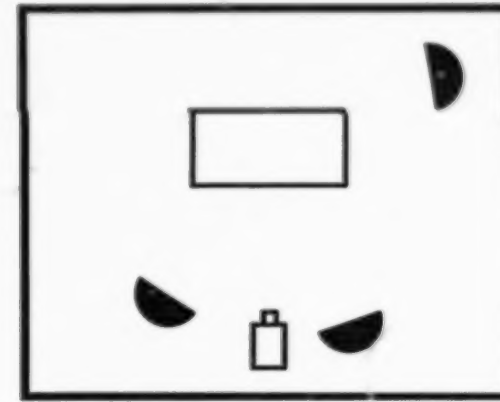
ONE LIGHT . . . provides dominant illumination, but causes severe shadows.



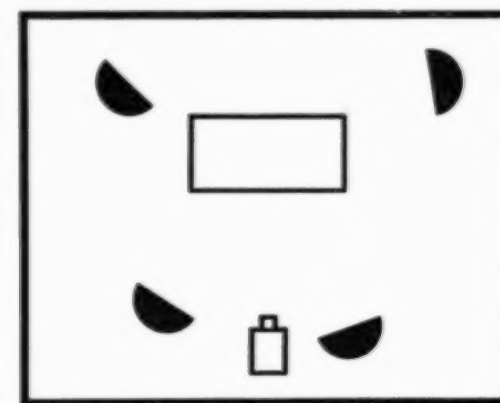
SECOND LIGHT . . . "softens" the shadows so you can see detail.



THIRD LIGHT . . . highlights the hair and shoulder, helping to separate the subject from the background.



FOURTH LIGHT . . . illuminates the background. Keeps subject from "jumping out of a dark cavern."



e. don't overlook the sun. When the subject area is not too large, the sun may be the easiest light source to use. Thus you can make an "indoor" movie outdoors. Naturally, you wouldn't want a pasture for a background on a sewing machine threading film. But perhaps you could borrow a "flat" from the drama class and do the filming beside the school building where a white sidewalk might help reflect light into the harsh shadows caused by direct sunlight. You can use white cards or crinkled aluminum foil as reflectors to help soften the shadows. Overcast days are excellent for outdoor filming because no shadows are cast and the subject is evenly illuminated. Remember, when you're filming outdoors in daylight, you don't use the filter key.



3. Set up your camera. The first impulse may be to hand-hold the camera. Don't. Your film will benefit from a firm support. Fit the camera onto a tripod. You want the subject to move—not the camera. Choose a tripod with a pan and tilt head. An elevation control will also cut down the time necessary to position the camera.

4. Position the camera as you have indicated on your planning cards. Don't lock yourself into a position dictated by the card if this position doesn't look as good as expected. Check the glossary of terms for various types of shots, camera angles, etc. But basically, just put the camera where it can see exactly what

you'd want a student to see. Remember, the viewfinder becomes the eye of the



student. What you see in the finder is what the student will see.

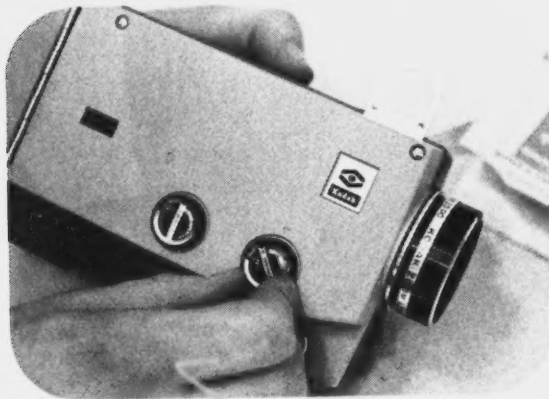
Camera angles and camera positions are so important to the final effect of your movies that these details should be determined in advance and noted on your planning cards.

5. About those backgrounds. Contrast with the subject is important, so select a background color and surface that separates the subject from the rest of the scene but is not so strong and colorful that it detracts from the subject. Plain, unobtrusive solids are usually best. For color choices, use pastel tones. Avoid very light or very dark backgrounds as these will tend to throw off exposure. Covering the tops of black laboratory tables with construction paper will help "show off" your demonstration. "Seamless" paper makes excellent backgrounds. Most of all: keep it simple!

6. Now make a dry run. With everything in position, rehearse each sequence before you film it. This gives an accurate indication of how your shot will look when it is projected, and it allows you to make any changes which seem desirable. This will also help the cameraman anticipate the action in each shot. During rehearsal, hand-hold your camera. Make final decisions about camera angles, image size, etc. Keep your student in mind. He can see only what the camera sees.

7. Camera adjustments. With the KODAK EKTAGRAPHIC 8 Camera, few adjustments are necessary. Film comes in a convenient cartridge that drops into place. An electric eye sets your exposure automatically. The large reflex viewfinder makes it extremely easy to see the subject clearly and to follow action.

But these three basic adjustments are necessary:



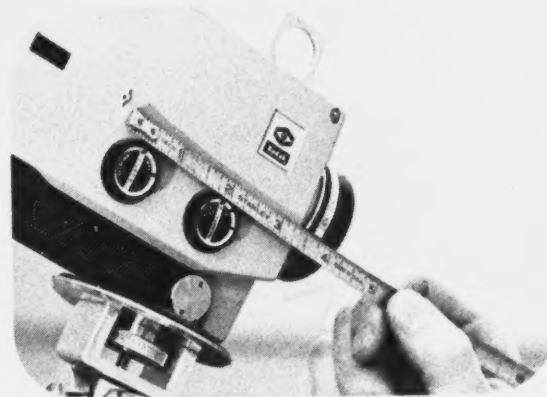
a. filming speed: For a silent movie you generally will film all your scenes at 18 frames per second. If sound is to be added later, you may want to shoot at 24 fps because commercial sound films are made at this speed. However, with Kodak super 8 sound projectors, you can record and play back good quality sound at 18 fps as well.



b. lens selection: With a zoom lens this means merely turning a knob to frame the subject in the viewfinder.



c. focus: You must set the lens for the distance from the subject to the film. This will give you a sharp, clear image and is extremely important to the overall success of your film. On the side of the camera you'll find this little mark: Φ . Measure from this point, not the front



of the camera. When you use a close-up lens, measure from the *front* of the *close-up lens*, and set the focus adjustment according to the instruction sheet supplied.



8. Film choice. Color should be the preferred choice for virtually all specific-objective films, not only because it is economically practical but because color adds authenticity, clarity, and interest. Color heightens and intensifies visual response. Color helps make distinctions. It emphasizes, attracts attention. Color is reality. For the finest color rendition



and the sharpest, finest grained movies, use KODACHROME II Film.

Sometimes you may find it desirable to use high-speed black-and-white film. For instance, you want your students to better identify with one another. You feel that a candid movie of student activities would help, but you don't want to inhibit the group with movie lights. In this case, shoot KODAK TRI-X Reversal Film. You won't need any additional lights. This film is available from Kodak Audiovisual and Movie-Processor Dealers.



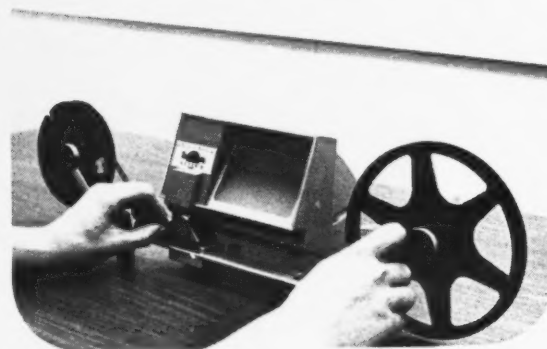
9. Now start filming. Just follow your planning cards and shoot exactly as you rehearsed during the dry run. (For additional ideas, see the "helpful hints" section.) Try to shoot a little extra foot-

age of each scene. Although this practice will cost you a few extra pennies, it will save you time, money, and trouble in the end. Ask anyone who's ever made a movie. Another good practice is to keep a record of each shot you make. Note the order in which you film the shots, and note whether or not the shot appears to be a "good take."

10. Processing your completed film. For Kodak processing, simply take your exposed film to a Kodak dealer or use a convenient KODAK Prepaid Processing Mailer. Film should be processed as soon after shooting as possible. You may want to have a SONOTRACK magnetic sound stripe added when your film is processed. Then, when the film is returned, you can record your own narration and sound effects. For expedited processing, use the AVP-1 mailer—available from Kodak Audiovisual Dealers.



Black-and-white reversal film processing service is generally not available from your local camera store because amateur movie-makers prefer color. Kodak Movie-



Processor Dealers do process black-and-white film for industrial and sports analysis purposes. Ask your school's athletic director for the name of the lab that processes his game films.

11. Editing. With adequate planning and practice during the dry run, further editing of a finished film may not be required. However, if a particular segment should be paced differently or appear in a different spot, simply cut the film apart and put it back together the way you want it. Films shot out of sequence will, of course, have to be edited into the final form. Here is where the notes you took while shooting will be valuable. Splices are easily made on super 8 film with PRESSTAPES and a KODAK Universal Splicer.



Editing is nothing to be afraid of. It's fun and can be very creative. Don't be afraid to cut the film apart, and don't be afraid to throw away those scenes that don't come up to your standards. These are two signs of professionalism in movie-making. As you become more experienced with film, you'll begin to "feel" the need for editing. When you reach this stage, you'll find this filming technique helpful: after each shot, put your hand over the lens and expose a few frames of film. This will make it easier for you to locate the spot where one scene ends and the next begins.

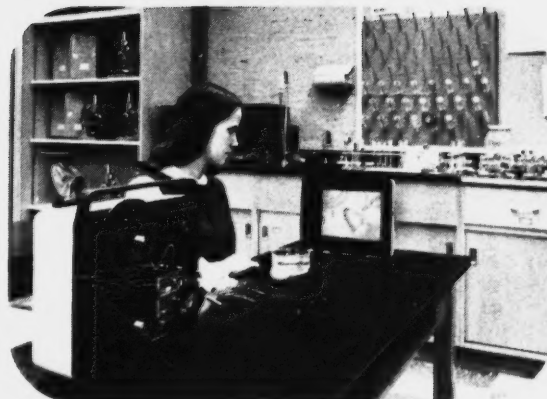
12. Adding sound. The simplest way, of course, is to narrate the film yourself as it is projected. Probably a better way is to tape record the sound and play back

RUNNING TIMES AND FILM LENGTHS FOR COMMON PROJECTION SPEEDS				
Film Format	Super 8 (72 Frames per Foot)			
Projection Speed in Frames per Second	18		24	
Running Time and Film Length	Feet + Frames		Feet + Frames	
Seconds 1	0	18	0	24
2	0	36	0	48
3	0	54	1	0
4	1	0	1	24
5	1	18	1	48
6	1	36	2	0
7	1	54	2	24
8	2	0	2	48
9	2	18	3	0
10	2	36	3	24
20	5	0	6	48
30	7	36	10	0
40	10	0	13	24
50	12	36	16	48
Minutes 1	15	0	20	0
2	30	0	40	0
3	45	0	60	0
4	60	0	80	0
5	75	0	100	0
6	90	0	120	0
7	105	0	140	0
8	120	0	160	0
9	135	0	180	0
10	150	0	200	0

the tape as you are projecting the film. But this has obvious problems of coordination and the necessity of keeping both projector and tape recorder on hand for each performance.

The best way is to record your sound on film magnetically. This is done by having SONOTRACK Coating added to your edited film. (If your edited film is 50 feet

TYPICAL RUNNING TIMES				
Film Format	Super 8			
Projection Speed in Frames per Second	18		24	
Inches per Second	3.0		4.0	
Film Length and Screen Time	Minutes	Seconds	Minutes	Seconds
Feet 50	3	20	2	30
100	6	40	5	0
150	10	0	7	30
200	13	20	10	0
300	20	0	15	0
400	26	40	20	0
500	33	20	25	0
600	40	0	30	0
700	46	40	35	0
800	53	20	40	0
900	60	0	45	0
1000	66	40	50	0
1100	73	20	55	0
1200	80	0	60	0



or less, you can use an AVP-1 mailer to get your film striped. If it is longer, simply take it to your local Kodak dealer.)

Then you simply project your striped film on a KODAK INSTAMATIC™ M100-A Projector. As the film is projected, you narrate your commentary into a microphone and it is recorded right on the film's magnetic stripe. You can play back and rerecord your sound track as you would with a tape recorder. You can also put the entire narration on sound tape and then, in one pass, transfer it directly to the film.

A big advantage of magnetic sound tracks is that they can be easily updated. Or recorded with sound to interest children of different age levels and language backgrounds. You can even make special sound tracks for the PTA.

13. Obtaining duplicate prints. Duplicates are helpful because they give several students or groups ready access to the film simultaneously. Or, they can be used in place of the original so the master copy is always in prime condition. If you believe you may want duplicates, extra care with lighting to avoid dark shadows and large dark or blank white areas is well worthwhile. Duplicates ordinarily are a little more contrasty, slightly less sharp than originals, and colors may be a little different. You will be the best judge of the acceptability of duplicates. If you're shooting a film about art, where color quality is important, and need an extra copy, it may be no great chore to shoot the original twice. Both quality and cost are likely to be more favorable

than if a duplicate is made later from an original film.

14. Choosing a classroom projector. The KODAK EKTAGRAPHIC 8 Projector offers the versatility of cartridge or reel loading. Simple, automatic threading. And a built-in KODAK Projection SUNSCREEN in the cover. (You can show movies to several students in full light!) The KODAK EKTAGRAPHIC Sound 8 Projector lets you show sound or silent super 8 movies. Your Kodak Audiovisual Dealer will be happy to help you make a selection.

Some Helpful Hints on Movie-making

1. Of what duration should a scene be? Give each scene just enough time to insure maximum clarity of communication. Long shots require relatively more time for the eye to absorb information. Long and medium shots may be brief if their purpose is to keep a close-up from being confusing. Close-ups can be shorter, but this, of course, depends on the action being filmed. Remember: you don't have to show the full length of the action. Movie time need not be real time. Variety in scene length is as important as variety in camera position and image size.

2. Using a zoom lens. Don't zoom your movie to death. While valuable, this effect can be disturbing. Generally it's better to establish your image size first with your zoom lens control and then shoot. Don't zoom more than 2 or 3 times per 50 feet. A good rule to follow is: don't zoom if you can do it another way. Try to "cut" instead.

3. When focusing, it's a good idea to take a tip from the professionals who use a tape measure for accurate close-up focusing, even though their cameras may have ground-glass focus arrangements. This is particularly important when using the lens at telephoto position at close range.
4. Titles may be important, and there are many ways they can be produced easily and imaginatively. Perhaps it is a long shot of a lathe, then a close-up (insert shot) of the nameplate. If it is a chemistry experiment, the film could start with the instructor writing on the blackboard, then move in to show only the formula he has written. You can mount cutout letters on a contrasting background or you can photograph hand-lettered copy. You can photograph three-dimensional letters placed on photographs or printed illustrations. The important factor is to keep titles short and simple—usually not more than 15 words in a single sequence, and large in size in relation to the area covered. Unless convenient, photograph them after normal shooting.
5. Everything you see in the viewfinder will be photographed. So, if you notice any distracting reflections or shadows, move the camera, your lights, or both.
6. Start shooting *before* the action begins and continue shooting a few seconds after it ends. Warn any people in your scene they are to begin on your cue and not when they hear the camera motor start. This extra footage will help a student orient to the scene in front of him and be prepared to follow the action when it is introduced. This extra footage also gives you any editing freedom you may need. Motions photographed close up should be made slowly and deliberately. Normal motion may appear as a confusing blur across the screen.
7. Don't hesitate to reshoot if the action isn't just what you wanted. You can always cut out a particular segment and replace it with a second "take." This is always more satisfactory than trying to set up and reshoot the scene later.
8. If you're filming a person doing something and want to change camera position in order to get a better look, tell the performer to "freeze." After he does, stop the camera and change its position. Even if the performer moves slightly, your viewer will not notice it because you have changed his precise frame of visual reference. (See page 27 for details.)
9. Remove wristwatches and other jewelry that may be distracting in a close-up. Do this *before* you make your first shot.
10. If you are going to add sound to your film, have the script read as you are shooting. This will help your actor pace his moves and provide you with a guide for the length of film necessary to accommodate the words. If you record your script on a tape recorder, you can use it to pace your filming as well as put it on the finished sound track. For greater narrating freedom, shoot extra footage of each shot. What you don't need can always be chopped out.
11. For maximum interest, your narration *should not describe the action* seen on the screen. This is primarily a visual medium and words should supplement—not repeat—what is being shown. Point out significant details or tell the student what to look for next, rather than describe what he can easily see for himself. Try not to overload the sound track with irrelevant material—a sound film doesn't have to have sound every second. Too much sound—even related information—may interfere with comprehension of the visual message.
12. If the action is too fast for best comprehension, shoot at a faster frame rate (32 fps). When projected, the action will take about twice as long to occur. 24 fps is just right for smoothing out action. 24 fps is also your best choice if you are going to add sound.
13. Remember you can use many avail-

able still pictures in your movie. Merely copy them at the spot in your sequence where they would be most beneficial—or shoot them separately and insert them later. You can even make stills “move” by zooming, quick cutting, and simple animation. When copying still pictures, use the same lighting arrangements as for titling.

14. You can produce “time lapse” films that make the action appear to be greatly speeded up—such as cloud formations for an entire day seen in only a few minutes on film. To produce this effect, set up the camera and, using a cable release, expose one frame at a time at predetermined intervals to produce the desired effect. Automatic time-lapse controllers are available and are useful when filming over an extended period.

Advanced Techniques

Such things as fades, dissolves, superimpositions, and so on are called “effects” or “special effects.” They, like zooms, pans, and tilts, constitute a kind of punctuation system; or flowery language in film-making. They are useful in dramatic films, and sometimes in other films. But overusing them is much like ending every sentence with an exclamation mark or like overusing flowery language. Even in dramatic films they are often overused. Informational films seldom need them and nearly always are better off with a straightforward expositional presentation; not “fancied” up with effects, background music, and tricks. As you advance in movie-making, you may feel the need to incorporate optical effects in your films in order to make smoother time and space transitions.

Here are some suggestions:

a) Fades. A fade-out is the gradual darkening of a scene until everything goes black. A fade-in is just the opposite. Fades are used to indicate the passage of time or a change of location. You can make a fade device by taking a piece of window glass and smoking it with the

soot from a candle. Make one end very black and gradually lighten it until the glass is clear. To fade out while you’re filming, simply place the clear section in front of—and very close to—the lens. Then slowly move the glass until you’re filming through the black section. Stop the camera but continue with the action. When you’re ready to fade back in again, put the black end of the glass in front of the lens, start the camera, and gradually move the glass until the clear section is in front of the lens.

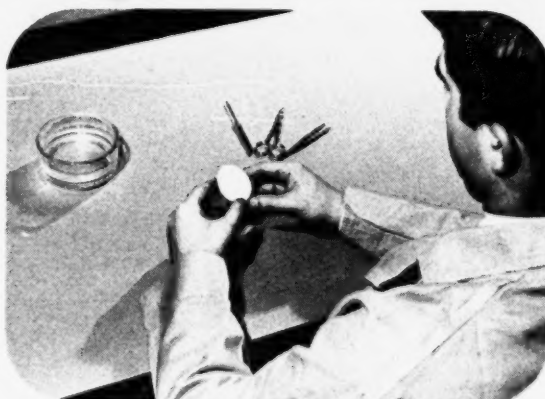
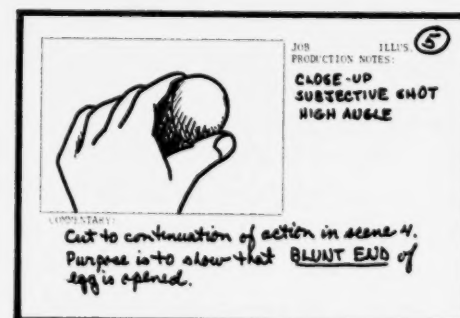
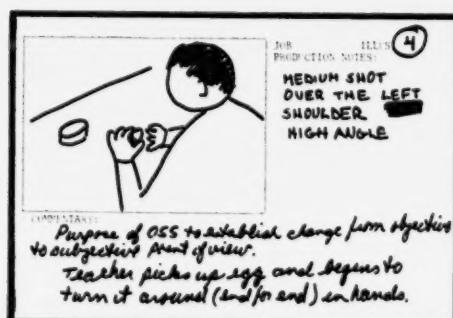
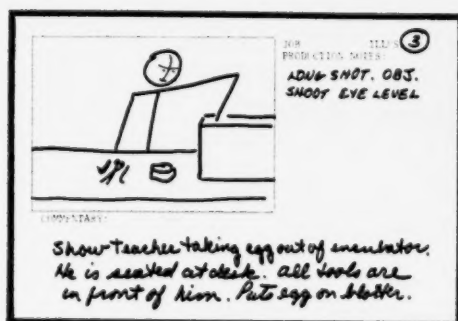
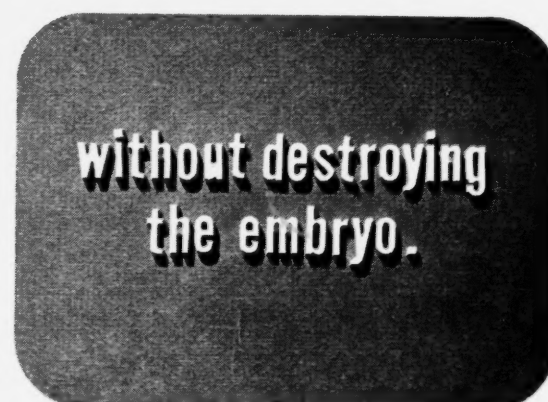
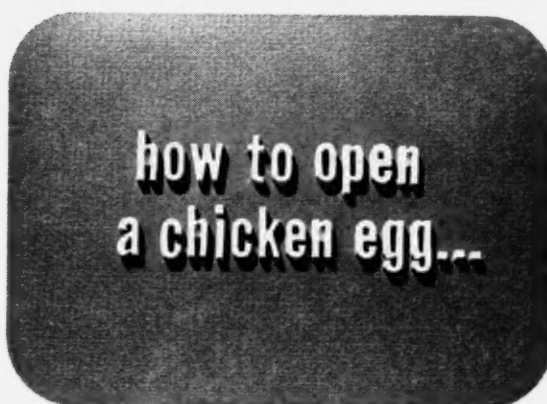
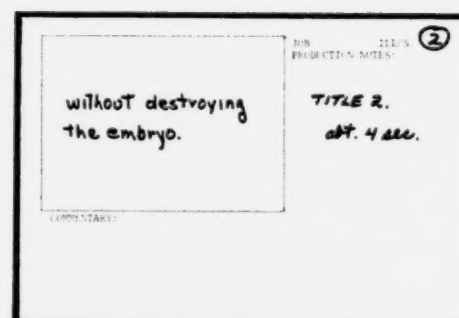
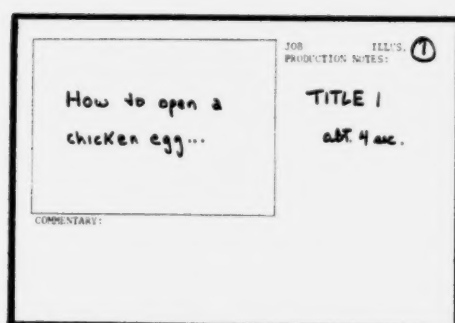
b) Ripple wipes. Another device to indicate the passage of time is the ripple wipe. This technique is particularly good for flashbacks. What you need in order to make this effect is a piece of transparent textured glass or plastic. (You can make your own “ripple glass” by heating one end of a piece of clear plastic over a Bunsen burner.) By passing this glass in front of the camera lens, you continuously distort the image on the film.

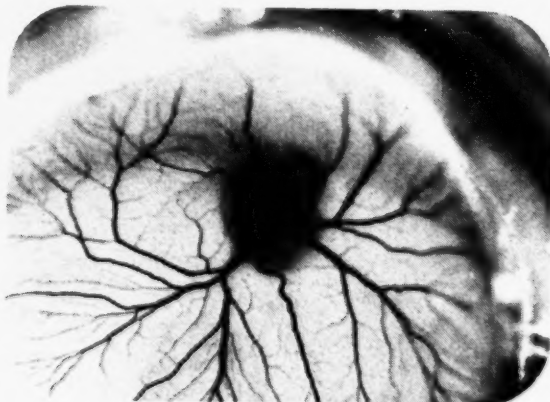
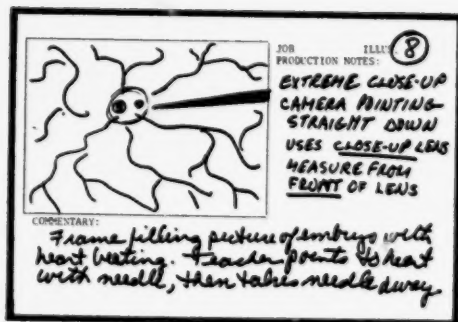
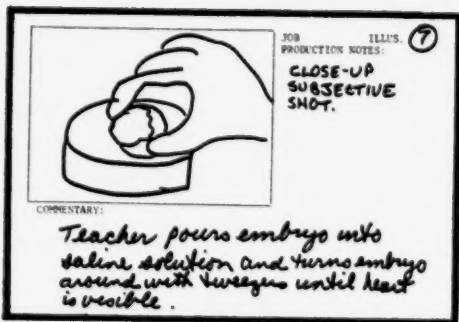
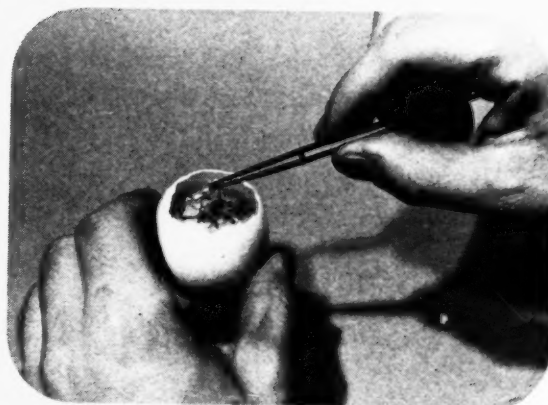
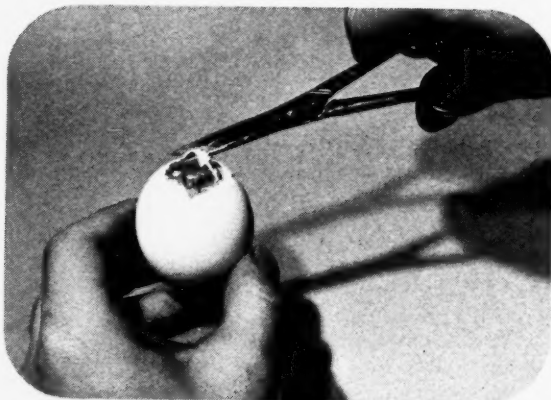
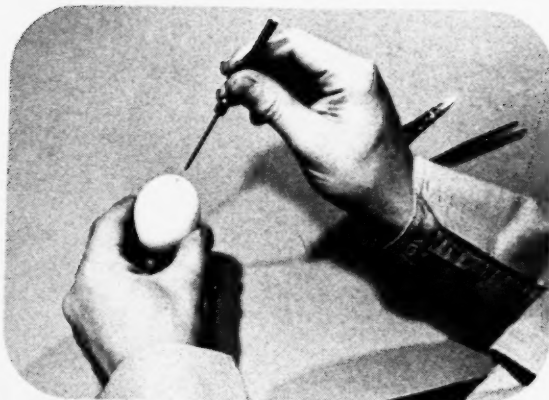
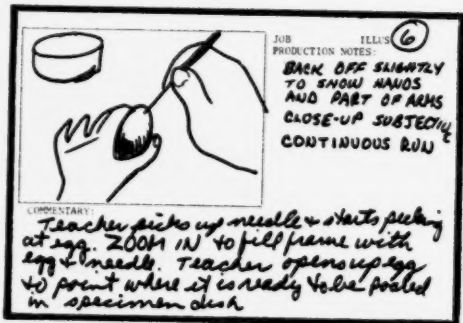
c) Swish pans. Here’s a technique made famous by television. It gives you the “~~meanwhile~~ *meanwhile-back-at-the-ranch*” effect. It’s nothing more than a very fast pan in which the resulting film image is very blurred. You can swish pan to the right or to the left; it doesn’t matter. All you need to create this effect is 3 or 4 inches of blurred film. When a swish pan comes along, the audience “reads” it as an immediate transfer to another location.

Scenes from

a Typical Single-Concept Film

Outlined here is a typical single-concept film. From the reproduced planning cards and stills, you can see how the movie was organized and filmed.





The Language of Movie-making

**A working knowledge speeds up
your planning and production work**

Just as the teaching profession has developed its own special vocabulary, so has the field of motion pictures evolved basic terms which communicate ideas, concepts, or technical information quickly and clearly.

The following pages contain a basic glossary of these terms which you will find helpful in making your single-concept movie. They are not difficult to understand and do not require intensive study.

You are probably somewhat familiar with many of these terms from your personal experience as a movie-goer. What's more, after you read this section you can see examples of what you have read by turning on your television set.

Watch how the camera shows you the action from a variety of angles. Notice how your viewpoint is changed from an overall view into an informative close-up. The commercials on television are, in a way, single-concept films designed to get a key message across to the viewer in a dramatic, memorable way—all in a matter of a few seconds.

Audience Role

Before you can start your movie, you must decide what role your audience is going to play. Are they simply going to watch the action as observers? Or do you want them to "participate" in the scene? Do you want them to get the feeling that they are actually performing the action instead of watching someone else? What camera angles are best for your particular film? Perhaps there are several.



Objective (OBJ). The objective camera films the action impersonally — through the eyes of an unseen observer. What the viewer sees on the screen is similar to what a student sees when he watches you make a demonstration. The viewer is not brought into the scene; he views it from outside. That is why objective camera angles are excellent for showing *what happens*.



Subjective (SUB). Subjective filming brings the viewer into the scene. The camera lens becomes the eyes of the person performing the action. The viewer is personally involved. He's not just watch-

ing the action from the sidelines — he's actually performing it! That's why subjective camera angles are so good for showing students *how to do something*. You might compare objective and subjective camera positions by making the analogy about tying someone else's bow tie. If you try to tie it from the front (objective angle), it is very difficult. But if you get behind the person (subjective angle), it is much easier. Why? Because that's the way you would tie your own bow tie.

In single-concept movie-making, you can change the role of the audience, and this will help to make your films more interesting. But for the beginner we would suggest keeping it simple. Stick to one camera angle—objective or subjective.

After a little experience, you'll probably see the need for changing the audience role. But keep this in mind: it is important to warn the viewer before you make the change. If you don't make some sort of transition, the viewer will become disoriented. These transitions, however, are easy to make. (See examples below.)

To help you get the feeling for continuity of action, look at television commercials with an analytical eye. Note the transition techniques (camera angles only—not special effects) that make it easy for you to change roles from unseen observer to on-scene performer. And note, too, how much more involving commercials become when your role as viewer is changed.

Changing camera angles from objective to subjective to objective



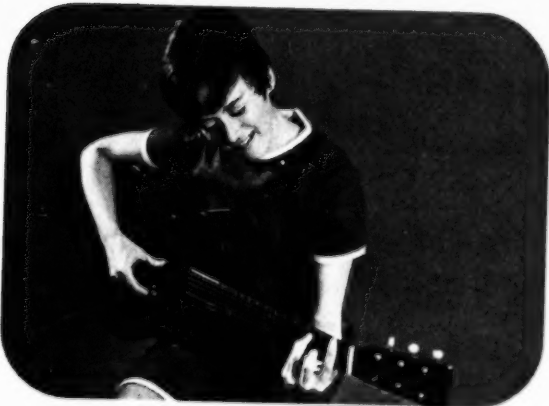
1. Objective medium shot



2. Objective over-the-shoulder shot



3. Subjective close-up



1. Objective medium shot



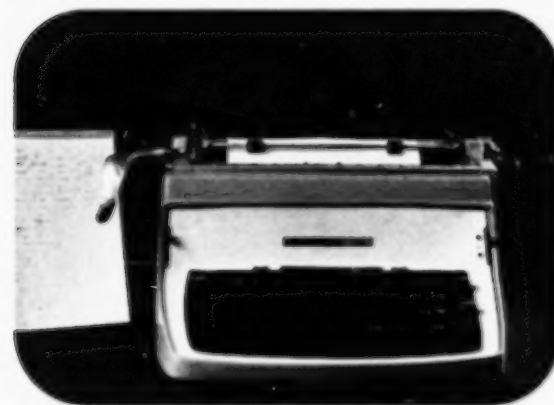
2. Objective close-up



3. Subjective close-up

Subject Angle

Except for instances in which you will be filming subjects such as maps, drawings, and the like, most of the subjects in front of your camera will be three-dimensional. But the camera can record them only in two dimensions.



Therefore, you should position your camera at an angle (to the left or right and/or higher or lower than the subject) that lets you see more than one side of the subject. This will add an illusion of depth and perspective to the filmed scene.



4. Objective over-the-shoulder shot



4. Objective medium shot



5. Objective close-up

Subject Size

How big is big? Naturally the answer is a relative one. But the answer is an important one when it comes to making a movie.

For instance, suppose the subject of your movie is a monument. You might have to locate your camera twenty-five yards away to get an overall picture of it. You might have to put your movie camera ten feet away to see the total inscription.

But suppose your subject was a chemistry experiment. Your overall shot of the lab table and setup might be shot from a distance of ten feet. And your close-up of the key test tube might be shot from as close as four feet.

No matter how big the subject of your movie is, it should be shot from several distances to provide variety, to maintain interest, and to direct the attention of your students to the precise details you want them to see.

In general, the camera distances fall into four general categories:

Long shots (LS). A long shot includes all the elements of a situation. It shows the basic relationship between the parts making up the whole. For this reason, long shots often are referred to as establishing shots—they help orient the viewer to the subject's environment. No one ele-

ment in the scene commands more attention than any other. Because of the small format of super 8 film, it is advisable to keep long shots to a minimum.

Medium shots (MS). Here the camera moves in close enough to show the main element of the scene. It establishes the center of interest that the student should focus on.

Close-up shot (CU). With close-ups the camera is close enough to permit one element to dominate the scene. The close-up emphasizes detail. This will probably be your most important shot in making a single-concept movie. With the KODAK EKTAGRAPHIC 8 Camera at a distance of four feet, you can fill the film frame with an object about five inches wide.

Extreme close-up (ECU). Some extreme close-up shots may require supplementary lens attachments to your camera's standard lens. Use of supplementary lenses depends upon the size of your subject. (Focusing supplementary lenses is different from focusing the camera's regular lens. See "Camera Adjustments" page 11.) The extreme close-up is most helpful in magnifying minute, but important, detail. For instance: a test tube being heated on a Bunsen burner, an ant colony, the pistil of a tulip, or the tool bit on a lathe.



Long shot (LS)

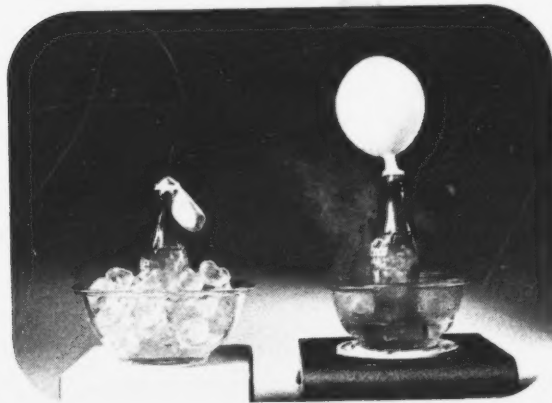


Medium shot (MS)

Camera Height

How high or low should you position your camera to shoot a scene? The answer to that question stems from another question. If a student was watching the actual scene, what would be his best vantage point? Would he see things best at eye level? Or would it be better to look up or down at the action.

Camera height has little relation to the physical height of the camera above the ground. It refers to the angle at which the camera looks at the subject. Camera height falls into three basic categories:

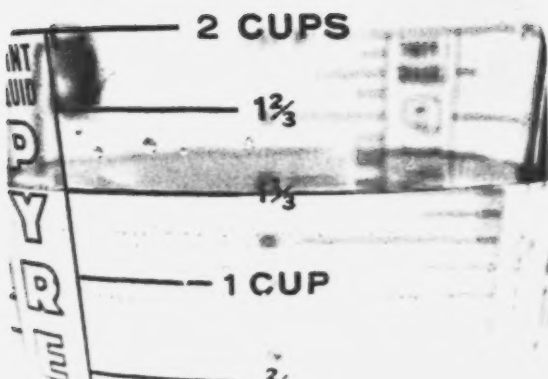


Eye-level shot. The camera is horizontal to the ground. When filming long and medium *objective* shots, the camera should be at a height of about 5 to 5 1/2 feet—the height of the average unseen student observer. If you're making the movie for elementary school students, you may want to place the camera somewhat

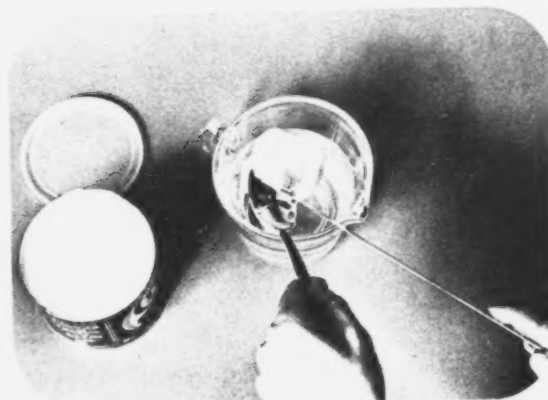
lower. Objective eye-level close-ups should be made at the height of the subject being photographed. *Subjective* eye-level shots should be made from the height of the person performing the action, be he standing, sitting, or up on a ladder. Although eye-level shots are not particularly interesting, they are easy for the viewer to identify with because they present an undistorted picture of the subject.



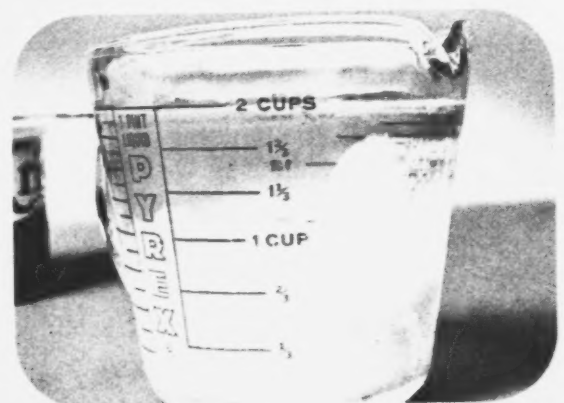
High-angle shot. The camera is tilted *downward* at the subject. High-angle shots help orient the viewer because they show the relationships between all the elements in the setting. For this reason, you'll probably use many high-angle shots in your films. High-angle "establishing" shots are useful if the action occurs in great depth, such as the gym class performing calisthenics or the intricate floral arrangements at the local botanical gardens. High angles will help keep all



Extreme close-up (ECU)



Medium shot (MS)



Close-up (CU)

the important elements in sharp focus. You'll find that high-angle shots are useful if you film subjective, how-to-do-it movies such as making a linoleum cut. Also high-angle shots can add interest to the commonplace.



Low-angle shot. The camera is tilted upward at the subject. Low angles tend to dramatize the subject, giving it an aura of grandeur. Low shots will probably be used when filming such things as battlefield monuments, church interiors, dinosaur skeletons, massive hydroelectric generators—any subject, in fact, which commands respect and authority. Low shots are also useful for separating the subject from the background, for eliminating unwanted foreground and background, and for heightening the illusion of size, speed, and perspective.

Lens Selection

The lenses used on movie cameras fall into three general categories: wide-angle, normal, and telephoto. Most of the better super 8 cameras, such as the KODAK EKTAGRAPHIC 8, have zoom lenses. With a zoom lens you have a multitude of lenses built into a single lens. A zoom lens is a single lens whose focal length can be changed from wide-angle to telephoto simply by turning a knob or pressing a button. Zoom lens controls are usually marked so that the camera operator knows whether his lens is set for wide-angle, normal, or telephoto filming. The various characteristics of each of these shots are described at right. We should point out that field coverage of movie

lenses is about half that of still camera lenses. Thus a wide-angle movie lens covers about the same area as a normal still lens.

Wide-angle. Wide-angle shots include more of the scene than your eyes concentrate on if you were standing next to the camera. The viewer feels that he is farther away from the subject than he actually is. Wide-angle shots are useful when you want to include more in the scene than is possible with a normal lens, and you can't move the camera away from the subject because of some physical restriction such as a wall. Wide-angle shots also change perspective. Foreground elements seem farther apart than normal. All the elements in the scene appear somewhat smaller. Wide shots have greater depth of field than other types of shots, so you can film a scene with an element very prominent in the foreground and still have elements in the background in acceptably sharp focus.

Normal. Normal shots cover the same area of a scene as your eyes do (excluding peripheral vision). Foreground, middle, and background elements are reproduced with normal perspective.

Telephoto. Telephoto (or narrow-angle) shots include less of the scene than your eyes would see. The viewer feels closer to the subject than he actually is. Looking through a telephoto lens is like looking through a telescope—only you don't have to be very far away from your subject. Telephoto shots are very useful when you want to increase the image size of the subject, but can't get any closer to the subject than you already are. Telephoto shots produce the optical effect of compressing the planes in a scene so that the foreground, middle, and background elements appear very close together. Telephoto shots have less depth of field than do normal or wide-angle shots, so it is advisable to measure the subject-to-film distance in order to get sharp focus. Measurement is particularly important when your subject is

only a few feet away, as in making a close-up. This limited depth of field can be used advantageously to throw the background out of focus. This technique will help to put more visual emphasis on the subject by making the background indistinguishable.

The series of pictures below will help clarify the characteristics of these three types of shots.

Descriptive Shots

Panning and tilting. Panning refers to swinging the camera around while the film is being exposed. (In movie parlance, vertical movement is called tilting.) It is used when a scene is too wide (or high) to be included in the viewfinder. Panning

is also used to follow action. Pans should be made very smoothly, *very slowly*—much slower than you would think necessary. Panning looks deceptively easy. But it isn't. That's why we'd recommend practicing the maneuver first before you waste film. Be sure your tripod is level so that the horizon line is level at the beginning and the end of the pan. Start the camera before you start to pan, and continue running it after the pan stops. A good rule to follow is *not* to pan. Rather, shoot a wide scene in two or more still shots.

Zooming. Zooming refers to the continuous changing of image size from small to large (zoom in) or from large to small

Camera position constant . . . subject size changes

Note how much more of the church interior is covered with the wide-angle lens than with the normal or telephoto lens—without moving the camera away from the subject.



Wide-angle



Normal



Telephoto

Camera position changes . . . subject size constant

Here we've attempted to keep the acolyte the same size as we change from wide-angle to telephoto. We did this by moving the camera away from the subject. Note how the background appears to get closer to the subject. Also, note that the background gets out of focus.



Wide-angle



Normal



Telephoto

(zoom out). This increase (or decrease) in image size is accomplished by continuously changing the focal length of the lens—not by moving the camera. Sounds complicated, right? But actually all you do is turn a knob or push a button. Like panning, zooming should be done smoothly and slowly—and used sparingly. Again, like panning, a good rule to follow is don't zoom if you can figure another way to make the shot. One of the best uses of a zoom lens is for pre-framing the subject *before* you shoot.

Follow shot. A continuous shot which follows moving action is called a follow shot. The idea of a follow shot is to pan the camera and keep the subject in the same relative position in the viewfinder. Follow shots will be useful if you want to film unbroken action that takes place in a relatively small area. If the subject makes a significant movement toward or away from the camera, you may have to change the focus setting on your lens. This is called "follow focus" and is difficult to do properly. A better—and simpler—practice might be to break the action into several shots taken from different camera positions.

Inserts. An insert is any segment of film, such as a full-screen close-up of a printed article, a machine nameplate, a Matthew Brady Civil War photo, etc, that is filmed separately and then spliced into the finished film at the most appropriate spot. Inserts are useful for expanding on the primary subject matter or helping to clarify the continuity of action.

Cutaway shots. Cutaways are used to depict a secondary action. They may show something that occurs simultaneously with the main action, whether it is a few inches or many miles away. They should, of course, always be related to the primary subject. A cutaway may also be used when you want to interrupt an extended flow of action. For instance, if you started a sequence with a close-up of a clock face, then cut to the main

action, a cutaway back to the clock would show how much time had elapsed.

Continuous run. When the action takes place within a small area and during a short period of time, it may be desirable to film the action continuously from a fixed camera position. The only camera movement options you will have are panning, tilting, and zooming. Continuous-run shooting is *advisable* if you are filming from a subjective camera angle. However, if the action is lengthy and repetitive (such as the various heating operations in a fractional distillation experiment), continuous-run shots would be boring—and unnecessary. It would be best to use cutaways, inserts, titles, or change the audience's role. That's one of the beauties of movies—they condense time by eliminating the unnecessary. If the action is short and/or repeatable, it might be better to film the action with multiple cameras, or recreate the action and film it again from a different vantage point. The resulting footage could be edited and reassembled into a "multishot" sequence. While continuous-run filming simplifies photography and reduces shooting time, greater variety and interest is achieved by using the camera to create an ever-changing series of images. Generally speaking, the longer the film and the more complex the subject, the greater the need for a change of pace.

Sequence shooting. The technique of constructing a film from various related shots is called sequence shooting. These shots may be taken at various times during a long complex operation, such as a chemistry experiment that would last over several days, or a field trip. If you would shoot the events in the chronological sequence in which they occur (even though some time had passed between each "take"), you would be shooting *in sequence*. This is called "editing in the camera." For variety, these shots should be taken from several different camera positions and angles. Theatrical feature

films are generally not shot in chronological sequence. All of the action that will take place at a particular location, or on a particular set, or with a particular group of talent, would be done at the same time. This means that the actors will have to change costume and jump around in the script, but this saves time and money. They shoot *out of sequence* or out of order. After all of the scenes have been shot, they then edit it into the proper sequence that will tell a story.

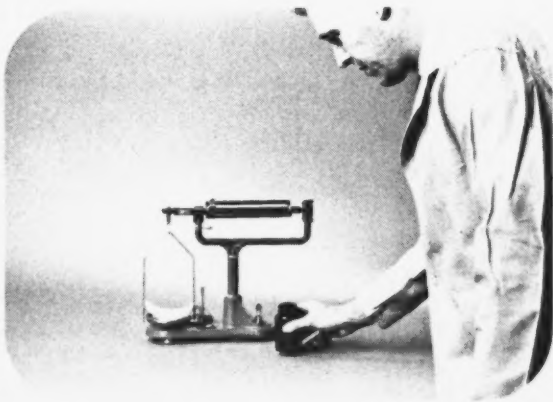
There probably will be times when it may be more practical to shoot your educational films out of sequence—such as to save a second trip to a particular location. One word of advice about this technique: keep a scene-by-scene record of what you have shot. This will make editing much simpler.

Continuity

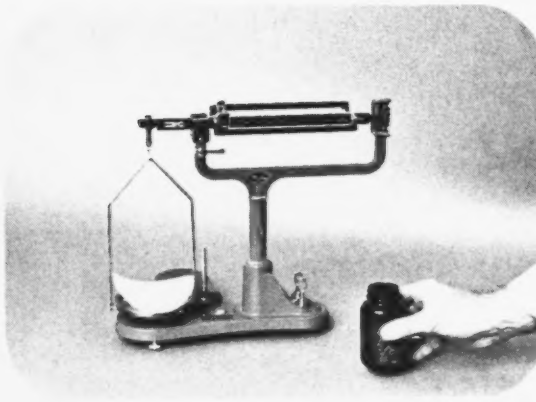
Before you go into actual production, it would be well to consider two things that will lead to greater continuity between shots in your finished film.

Matching the action. As you change from a long to a medium to a close-up shot, it's important to make each new scene appear to be a continuation of the preceding one. This is called matching the action. Thus if your long shot ends with a hand and arm reaching for a vial of crystals, the following medium shot would show the hand grasping the vial, and the close-up the vial held in the fingertips as the crystals are poured out on the analytical balance. In order to make smooth transitions from one shot to the next, *change the camera angle*. Move the camera up or down, to the side, or both. If you do this, the viewer will lose precise orientation of the hand within the scene, so the change in screen image will appear smooth and natural.

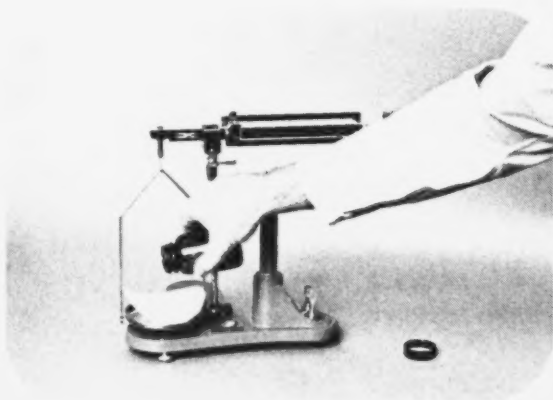
Screen direction. Screen direction is the direction of motion on the screen—the *direction of movement in relation to the camera*. For instance, if your subject walks into the scene on the left and out on the right, but reappears from the left without explanation, the audience will be jolted. Confusion will also result if a continuous straight-line motion is shown going from left to right one time and right to left the next (as it would appear if you made a long shot of someone feeding a board into a table saw from one side and then moved to the other side of the saw for a close-up). If screen direction is to be reversed, show in the film how it is reversed (such as the person going to the other side of the saw), with one or more shots inserted between reversals to give the viewer time to forget. (See the guitar-playing example on pages 20 and 21.)



End of long shot



Beginning of medium shot



End of medium shot



Beginning of close-up



Using Your Camera Effectively

What we have described so far is the "grammar and parts of speech" of motion picture film production. Together with your knowledge of communications, your audience, and your subject matter, these guidelines will help you make mature, hard-working, single-concept films.

We strongly recommend that you film your subject from several different camera angles. Don't just set your camera down in a fixed position and shoot. Why? To answer this, let's make an analogy between a single-concept film and a paragraph. Both are composed of discrete and complete bits of information—important visual ideas and main clauses, respectively. Isn't it generally better to construct a paragraph from interrelated sentences than to string the main clauses together with conjunctions? Well, the same holds true for

motion pictures. Express each visual idea as an individual shot (or sentence). Put the shots together in their proper order, and you have a single-concept film (or paragraph).

This technique is not particularly difficult. All it takes is a little planning—the same sort of preparation your daily lesson plan requires. Basically, all you do is break the total action down into individual movements and photograph each movement from the best vantage point. That's all—really!

We hope MOVIES WITH A PURPOSE has been helpful. Although the booklet is packed with information, don't feel you have to memorize every detail. Rather, use it as a reference book. Use it as an idea-starter. Use it to help you make those movies that help you teach; those movies that help your students learn; those movies that have specific purposes.